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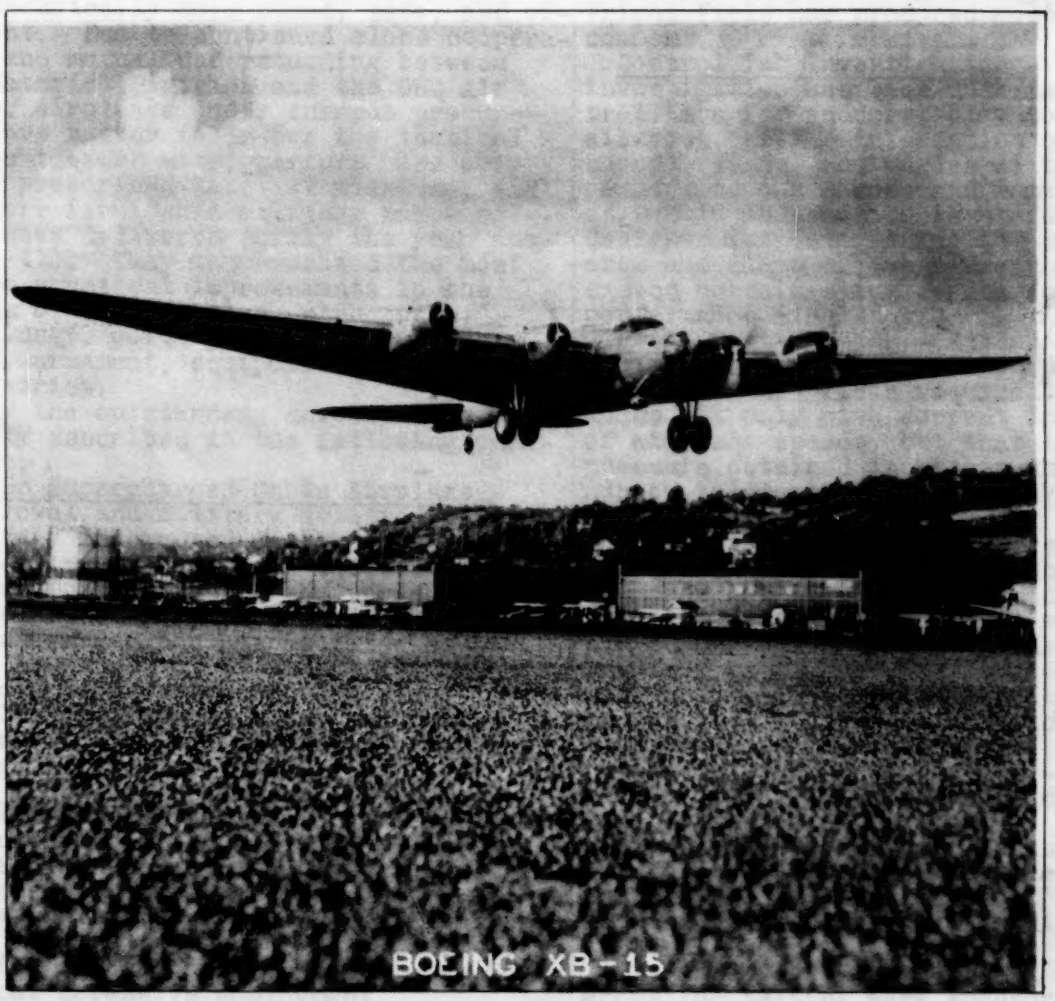

BOEING XB-15

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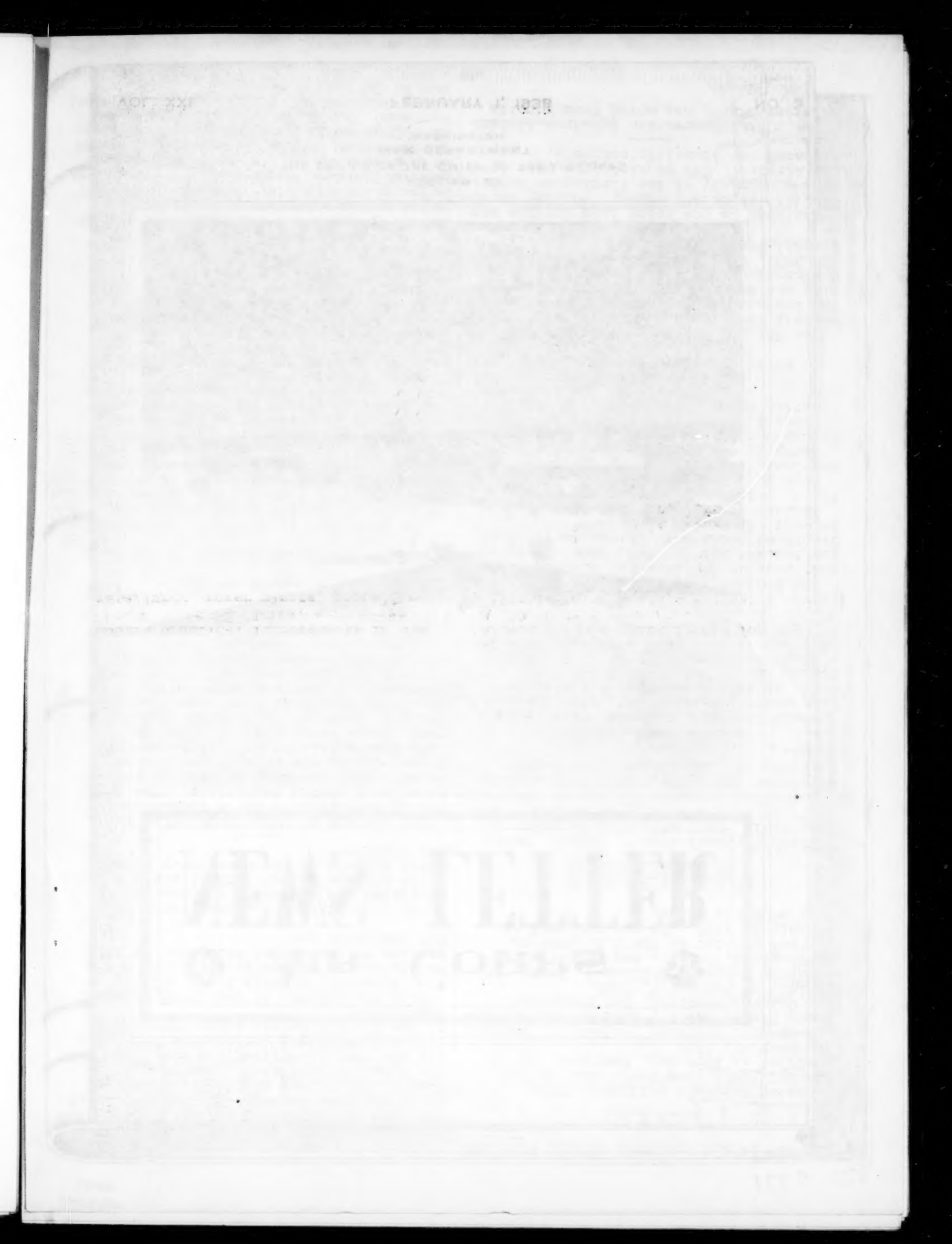

VOL. XXI A I R C O R P S N E W S L E T T E R NO. 3.

Information Division
Air Corps

February 1, 1938

Munitions Building
Washington, D.C.

The chief purpose of this publication is to distribute information on aeronautics to the flying personnel in the Regular Army, Reserve Corps, National Guard, and others connected with aviation.

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MATERIEL DIVISION ACTIVITIES FOR THE YEAR 1937

By Brigadier General A.W. Robins,
Chief of the Materiel Division

The calendar year 1937 was marked by important engineering advances in all aeronautical fields of technical endeavor. New airplanes, both commercial and military, average twice the size of their immediate predecessors in terms of gross weight, feature improved performance, and are technically more sound, safe, and efficient. Due to continued close cooperation and mutual understanding between the Materiel Division and the GHQ Air Force, airplanes under current procurement are better tools for the tactical groups to work with, perform more ably their prescribed tactical missions, and are more formidable military weapons. Airplanes delivered during the year numbered 410. They incorporated the most modern practical improvements in the fields of aerodynamics, structures, metallurgy, power plants, propellers, radio, armament, equipment and related accessories.

Only the outstanding developments are briefly described in the following paragraphs.

XC-35 Supercharged Cabin Airplane.- Commercial and military aviation were intensely interested in the construction and testing of the first successful pressure cabin airplane in the world, built by Lockheed. This airtight, sealed, and supercharged cabin has operated at altitudes in excess of 30,000 feet with an internal cabin pressure equivalent to 10,000 feet. Oxygen tubes and heavy winter clothing are no longer essential to high altitude flight.

XFM Multi-Place Fighter.- The Bell Aircraft Company delivered in September a twin-engined high performance Pursuit fighter. Equipped with pusher propellers and gunners' stations forward in the two outboard nacelles, the airplane seems to have tremendous fire power fore and aft, and may open up new fields in tactical defensive employment.

XB-15 Airplane.- An airplane believed to be the largest and most formidable bomber in the world was delivered by the Boeing Aircraft Company in December. Many of its design features and structural details are being used in Boeing 4-engined commercial seaplanes and landplanes now on order by Pan American and T.W.A.

Aircraft Developments

Nose-Wheel Landing Gear. Continued testing of the nose wheel and tricycle landing gear installed on the Douglas Amphibian OA-4A by pilots at N.A.C.A., Langley Field, Bolling Field, and Wright Field has produced most favorable comment.

Control Tab Investigation.- Qualitative investigation has been undertaken of control tabs for rudders, elevators, and ailerons, giving information on sizes, chords, spans, and angles of tabs, with respect to the forces and moments obtained. This information is useful to the designer for determining the correct area and shape of tabs in order not to exceed certain stick forces for high performance airplanes.

Pitot-Static Heads.- Extensive investigation was conducted on air-speed pitot-static heads. It is required that these heads not only give correct indication of airplane speeds, but that the static pressure obtained is within the very narrow tolerance necessary for use in blind landings.

Stability Studies.- A correlation of stability derivations for pitching, yawing, and rolling moments was determined on a tailless airplane model which displayed very good stability characteristics in free gliders when tested as a model glider. It is planned to compare these stability characteristics with those of modern airplanes.

Take-Off and Landing Tests.- Approximately fifty take-off and landing tests were conducted and analyzed. The tests were made, both for determining whether the contract airplanes met the guaranteed performance and as a study to improve methods for take-off and landing calculations.

Wing Radiator Study.- Tests and programs for testing were sponsored for investigation of liquid engine cooling by radiators placed within the wings.

Wing Engine Study.- Tests and programs were originated for investigating the efficiency of tractor and pusher airplanes with engines within the wings.

Wind Tunnel Models.- Positive tests on numerous wind tunnel models were conduct-

ed in order to establish specification requirements for various new types of military aircraft; also to determine performance characteristics of airplanes submitted to the Division in competitions or on contracts.

Propellers.- The Division has taken the initiative as sponsor in the development of counter-rotating propellers (two propellers close together, rotating in opposite directions on concentric shafts). One installation using non-controllable counter-rotating propellers is now undergoing tests and two types of controllable propellers for such application are in course of design and construction. In a similar manner the Division has developed a thrust meter to be built into engines, copper-brazed hollow steel propeller blades, hollow steel blades with supporting internal ribs, and plastic-impregnated wood blades for large diameter controllable propellers. The engine-propeller thrust meter will permit the determination of variation in propeller efficiency as affected by tip speeds and variations in propeller designs. In addition, the full-scale drag coefficients of airplanes may be accurately determined from gliding tests at zero propeller thrust. Extensive flight tests with full feathering propellers on bi-motored airplanes have proved the worth of this type of propeller in permitting the positive stoppage of the engine and propeller in case of an emergency. In addition, the full feathering propeller permits an increase in all phases of airplane performance, stability, and ease in handling over the wind milling or braked condition.

Wings.- A single shear web, stainless steel, outer wing panel in conjunction with the Fleetwings, Incorporated, of Bristol, Penna., has been developed. A number of stainless steel spot-welded wings of the two-shear web type for the OA-4A airplane are under construction. To date two of these wings have been delivered and are now undergoing service tests at Langley Field. Two wing panels built of aluminum alloy with spot-welded intermediate stringers for the Northrop A-17 airplane will be flight tested to determine the value of spot welding when subjected to vibration.

Power Plants

The tremendous expansion of aircraft engine power which has occurred during the past decade could not possibly have been foreseen. When the dynamometers were originally designed, a 500 hp. engine was the aim of engine experts. The dynamometer laboratory was designed for double that capacity as a leeway for expansion. During 1937, however, the "hump" of the 1000-hp. engine was passed. This fact necessitated new construction in the power plant laboratory to provide facilities for testing the higher powered engines already making their appearance.

Current engines are of the 1000-h.p. type. Instead of doubling this amount for further expansion, it has been tripled. New dynamometers are capable of absorbing approximately 3,000 h.p. This has been made possible by the installation of new water brakes.

Increase of capacity for power absorption, however, is but part of the story. Related accessories likewise were affected. Necessity for soundproofing was vital, as the noise produced by a 1,000-hp. engine undergoing test on a block is nerve-shattering to those working within close range.

With increase of power comes increase of speed and, in order to simulate air flow over cylinders of air cooled engines, capacity and efficiency of blower fans had to be more than doubled. Necessary construction relative to these changes is fast nearing completion.

Liquid-cooled engine development has culminated in the Allison V-1710 passing the type test at 1,000 h.p. This engine has been installed in the P-37 and the XFM-1 airplanes and indicates definite promise of success. The Wright R-2600 air-cooled engine has recently passed a creditable type test at 1500 take-off horsepower, and the Pratt & Whitney 1830 and 2180 series have also been progressing in a satisfactory manner.

In line with the trend toward simplification of controls, supercharger regulators and automatic mixture controls have been under development. An automatic tank selector is the most recent object for study under this category.

Materials

Transparent Materials. The use of canopies has stimulated a search for material with the transparency of glass, but with less fragility and weight. The celluloid windows in the cargo airplanes soon became opaque. The cellulose acetate turrets on the bombers were an improvement but far from satisfactory. A new resinoid, methyl methacrylate, is definitely superior and will be standard equipment on many of the new types.

Testing Machine.- Indicative of the trend in design, a 600,000-pound testing machine has been installed in the Material Branch laboratory.

New Chrome-Nickel-Molybdenum Alloy.- With increase in power, engines operate at higher temperatures and there is an insistent demand for materials which will meet these conditions successfully. The silchrome valve steel used a few years ago had a tensile strength of 12,000 p.s.i. at 1600° F. The present valve steel is good for 32,000 p.s.i., and in the past year a chrome-nickel-molybdenum alloy has been developed which has a strength 75 percent greater.

Self-Sealing Tubes.- Tires and tubes which will seal themselves after being punctured by bullets are under development.

Armament

Bomb Racks.- Experimental development and tests were completed on an improved type bomb rack assembly. This rack design provides for a wider selectivity in the release of bombs than the standard equipment, and includes an illuminated control panel on which is illustrated, by a series of electric lights, the size and location of bombs with which the rack is loaded for automatically spacing the location of impact when bombs are released in train. Two of these rack assemblies, which are suitable for installation in B-18 type airplanes, are being procured for service test.

Interval Control.- For the purpose of automatically controlling the time element between successive bombs released in train, thereby producing the desired spacing of bombs on the ground, a mechanism has been successfully developed that can be installed within the electrical control circuit of existing attack and bombardment type airplanes. Sufficient quantities of this unit to equip all existing attack and bombardment airplanes are now under procurement.

Flexible Gun Installations.- The development of turrets in which the gun and gunner are enclosed and which are arranged to produce the greatest possible field of fire have greatly improved operation conditions of flexibly mounted guns. This type of mounting is now required in the design of all bombardment airplanes where the efficiency of the gunner for defense purposes is of prime importance.

Automatic Gun Charging Mechanism.- With a view to obtaining the maximum power of gun fire, especially in attack airplanes, which are normally equipped with four free firing small caliber machine guns, there has been successfully developed a device which automatically recharges the gun in case of malfunction, bringing it back into full operation without attention from the pilot. Quantities of this device have been procured for service test in attack airplanes and further development work is in progress with a view to simplifying installation requirements.

Flexible Gun Mounts.- Adapters equipped with recoil compensating devices for application to .30 and .50 flexibly mounted guns have been developed which substantially reduce forces transmitted to adjacent airplane structures and increase the efficiency of the gunner with reference to field of fire.

Navigation Equipment and Instruments

Automatic Landing System.- Because of the variety of items involved, equipment development is always of especial interest. This year the accomplishment of the first fully automatic airplane landing in history was an outstanding achievement. The equipment responsible for this accomplishment allows the pilot to fly the airplane by use of the radio beacon, or other navigational methods, to a point within twenty miles of the airdrome at any normal cross country altitude. If when within this range the pilot closes the master automatic landing switch, the airplane will be turned automatically and flown to a point in line with the runway; automatically it will lose altitude and from that point will be flown to the airdrome, a landing accomplished, and the airplane controlled to the end of the roll entirely by automatic means.

The achievement of automatic landing has been a more or less gradual development. For the past two years airplanes have been flown automatically from point to point by means of the automatic gyro pilot and automatic accessory control devices. The first automatic instrument landing, made in August, 1937, culminated in a series of fully automatic landings. As a safety factor in bad weather flying, it is anticipated that this system will prove of untold value. The development of such a system was in line with the policy of obtaining, as far as possible, automatic control of all airplane operations.

Sensitive Altimeter.- Emphasis on navigation equipment resulted in 1937 in the development of several other important items of equipment. A sensitive altimeter known as the Type C-8 is one of these. This new altimeter is identical with the Type C-7 now in use except for a zero-setting scale graduated in inches of mercuty pressure in addition to the zero-setting scale graduated in feet of altitude. The mercury pressure change was added to permit convenient reference by the pilot in both systems.

Gyro Magnetic Compass.- Experimental tests of the gyro magnetic compass resulted in a service test order of 10 of these instruments being placed. This compass is in effect a magnetic north-seeking directional gyro. This objective is obtained by mounting a small magnet on the gyro rotor housing in such a manner that two small air jets maintain the gyro card in alignment with the magnetic meridian. Since the magnet is maintained in substantially a horizontal plane by the gyro even during turns, the turning errors usually found in magnetic compasses are eliminated. The tendency toward oscillation is also eliminated by the dead beat gyro. This compass, in order to eliminate errors due to magnetic material, incorporates air bearings instead of the usual hardened steel type. This instrument promises to prove an important development in the near future.

Navigator's Drift Meter.- The Type B-3 navigator's drift meter is, it is believed, the most remarkable ever furnished the service. This type of drift meter has resulted from the application of a self-erecting gyroscope upon which the reticle is carried to the optical system. Stabilization of the reticle eliminates

the wandering of a ground object down the reticle lines and enables drift to be measured with uncanny accuracy and rapidity even at extreme altitudes. The Type B-3 instrument opens up a heretofore unexplored field in dead reckoning navigation.

Line of Position Computer.- With the B-3 drift meter, a line of position computer, Type A-4, takes its place as a unique and remarkable conception. This instrument solves the usual celestial navigation problem without the use of almanac, tables, or graphical devices. It is not only unique in that the almanac data are incorporated, but it is the first celestial triangle computer in which positively geared rotary motion entirely replaces semi or full circular arcs normally representing the celestial and terrestrial circles involved. A radical mechanical departure makes possible the above substitution. The incorporation of differential counter type synchronizers greatly reduces the operating torque. Thus both ease and rapidity of operation are accomplished. With this computer the customary sun-star problem can be solved with an accuracy of two minutes of arc in two minutes of time, without the use of almanac, tables, or graphical devices.

Electrical Equipment

Alternating Current System.- Principal among the developments in tje electrical field during 1937 is an alternating current system, whose power is derived from separate gasoline engines installed in the fuselage. This system permits the removal of all accessories from the main engines, giving them more dependability and ease of maintenance. As a result of the experience gained in this installation, the Air Corps has adopted an alternating current source of 110 volts, 400 cycles, and 3 phase as a standard for future similar installations in airplanes over 25,000 pounds gross weight. This system was installed in the Boeing B-15 and Bell XFM-1 airplanes.

Lighting Systems.- A portable flood light has been standardized. The light is supported by a collapsible tripod and when packed in its carrying case for air transportation weighs only 130 pounds. This unit has proved quite efficient for lighting auxiliary fields during maneuvers.

An oscillating beacon has also been developed which has a spread of 360° and oscillates its beam vertically 40 times per minute, from the horizontal to 8° above the horizontal. This type of beacon is especially valuable under thick weather conditions. An automatic lamp changer and a better lens for greater light efficiency throughout the vertical sweep of the beam are recent improvements.

A change in instrument board illumination which gives each individual instrument its own light instead of indirect lighting of all instruments has been adopted. Individual lighting was found to be the best solution to the problem of illuminating desired instruments without incurring glare and reflections in the cockpit.

Photography.- Work is progressing in aerial photography on the speeding up of field methods of development, processing, and drying photo prints. Leading color photographic processes are being investigated both for making transparencies and color paper prints. An interesting color camera has been constructed. Work is favorably progressing on a wide-angle lens for topographic mapping, which when perfected and installed in a camera, may replace the multi-lens type of camera.

Miscellaneous Equipment.- Other miscellaneous items of equipment which have received special attention during the past year may be summed up as follows: A 7,000-foot cable tow target windlass which permits the towing of aerial targets at a sufficient distance to the rear of the towing airplane to eliminate the need for leading the airplane during anti-aircraft gunnery fire at high towing speeds; a pneumatic life raft container which provides for automatic release and inflation of the raft in an emergency water landing from land airplanes; a quick attachable parachute harness which obviates the need of removing stitching for different size adjustments and permits adjustment to be easily accomplished by the wearer; a light-weight portable wing jack for use with large airplanes which may be folded and transported by air; a portable hydraulic work stand for hangar use which has a height of 14 feet and may be raised either by power or by hand; a maintenance shelter consisting of a demountable tubular frame covered with water-proof canvas, which completely covers the engine and landing gear.

Physiological Research.- In the physiological research laboratory, extremely interesting studies have been completed. These deal with the influence of flight in various phases on personnel, including the effect of high positive, negative, and linear acceleration during acrobatics; the effect of repeated exposures to oxygen want; and proof that flight at high altitude may produce the "Bends" similar to that found in deep sea diving.

Radio

Among communication projects assigned to the Aircraft Radio Laboratory for development during the past year were an improved command set involving novel features, a new headset for cabin airplanes, an improved throat microphone, two new interphone systems, improvements in instrument landing systems.

Probably the most interesting equipment developed as a result of this program is the new command set, which consists of four main units; a control box for the pilot's compartment, a transmit-

ter, a receiver, and a transmitter dynamotor, all of which may be installed in a convenient location in the airplane and operated by remote control from the pilot's compartment. The transmitter operates on any one of four crystal-controlled frequencies placed anywhere in the band between 2500 and 8000 kilocycles, and change from one frequency to another can be made in a few seconds. Either CW or voice transmission is available. The receiver has complete tuning coverage over the three channels; 200-400 kc, 550-1500 kc, and 2500-8000 kc, as well as three crystal-controlled frequencies in the last channel. Provision is also made for reception on either of two shielded loops, one parallel to and one transverse to the front-rear center line of the airplane for the elimination of rain and snow static.

In the field of air navigation, 175 of the latest type radio compasses have been procured and delivered to using organizations. An order has recently been placed for 800 additional compasses of the same general type, but with some mechanical and electrical improvements.

Several minor improvements in the equipment used for instrument landing have been made, and study of various types of landing beams is in progress, the ultimate objective being the inclusion of one of them in the present landing system.

Field Service.

On June 15, 1937, the Hq. & Hq. Sq., 1st Transport Group, A.C., was consolidated with the Hq. & Hq. Sq., 10th Observation Group, A.C., and redesignated Hq. & Hq. Sq., 10th Transport Group, A.C., with station at Patterson Field, Ohio, but to function at Wright Field, Ohio, with the First, Second, Third, Fourth and Fifth Transport Squadrons and the First Service Squadron assigned thereto without change of status or station. The First Transport Squadron is stationed at Fairfield Air Depot, Ohio; the Second Transport Squadron at Middletown Air Depot, Pa.; the Third Transport Squadron at San Antonio Air Depot, Texas; the Fourth Transport Squadron at Rockwell Air Depot, California. The Fifth Transport Squadron and the First Service Squadron are inactive. Strength of Group on June 15, 1937: 24 officers and 239 enlisted men.

The Materiel Division has been issuing instructions for the operation of transports between Depots since November 15, 1936. During this time 132 round trips were made between the various Depots, traveling a distance of 413,090 miles and carrying 558,773 ton miles of freight, which is equivalent to carrying 558,773 tons a distance of one mile.

During the course of one year it is reasonable to assume that at least 1,600 tons of freight are moved between Depots and between Depots and Stations at a saving of approximately 30 per cent in packing, labor, and shipping costs.

MOSAIC MAPPING PROJECT

Photographic personnel of the Air Corps Training Center are undertaking a good-sized mosaic mapping project of the area around Fort Clark. The mosaic is desired by Headquarters, 1st Brigade, at Fort Clark, for the purpose of bringing their maneuver map up to date. The project was first submitted through 8th Corps Area Headquarters to Brooks Field, but due to a crowded schedule Brooks Field could not perform the mission before the first of July. Since the maps are needed for tactical inspection around the middle of April, special efforts are being made to get the job done by another organization.

Although the Photographic Detachment at Kelly Field is organized for the service of the School, the Commanding Officer of the Air Corps Advanced Flying School, Colonel Arnold N. Krogstad, wishing to ascertain what could be done in the way of a large scale project with the limited equipment on hand, decided to undertake the mission. Details and arrangements were left to the Photographic Officer, Lieut. Charles F. Densford.

The area to be covered is approximately 950 square miles, divided into five sectors of approximately 200 square miles each. Flight maps were prepared by members of the Photographic Department of Headquarters Squadron. It is calculated that twelve rolls of film will be needed. Exactly this amount of film was found to be on hand in the Photographic Laboratory and Air Corps Supply. Emergency requisition was submitted for 12 rolls of film and the necessary paper and chemicals to complete the project. Materials requested on emergency requisition were then to be used to replace the materials taken from stock. The mission was assigned on January 6th, and plans were completed and the flight ready to go on January 8th. They planned to use five O-25 airplanes, flown by two Observation instructors, Lieuts. E.R. Todd and A.R. Walker, and three officers from "back of the line," Captain R.E. Holmes and Lieuts. Densford and Clark. Sergeants Klutz, Coy, Kjelland, and Corder, and Private Evans were selected to perform the photography.

Bad weather delayed the beginning of the work for ten days, but on the 18th it was good enough to start. In the meantime the students of the Observation Section had departed on their navigation flight, taking all but one of the O-25's and two of the pilots. There were still left at Kelly Field one O-25, one O-19 and two O-35's, one of which was out of commission. With the three airplanes available, Captain Holmes and Lieuts. Densford and Clark started the project, with Sergeants Coy, Kjelland and Corder handling the cameras. Approximately three-fifths of the work planned was accomplished on the 18th. However, two

(Continued on Page 6)

BOMBING BY THE 19TH BOMBARDMENT GROUP

Well along in its progressive training of highly efficient combat crews for the new B-18 type Bombardment airplanes with which it is equipped, the 19th Bombardment Group, GHQ Air Force, March Field, Calif., culminated, on December 21st, the second phase of intensive training devoted primarily to the airplane commander and his combat crew by blasting the "large silhouette" target almost off the Mohave Desert with large H.E. bombs. Under the direction of the Group Commander, Lieut. Colonel Harvey S. Burwell, the operations conducted by Major Grandison Gardner, Group Operations Officer, included all phases of handling high explosives, successfully calling for thorough knowledge of and practice in the moving, hoisting, loading, fuzing, carrying, and dropping from high altitude the largest type bombs.

The proof of the value of the program instituted by the Commanding General of the First Wing lay in the ease and dispatch with which operations with 600, 1100 and 2000-pound bombs were carried to a highly effective conclusion by the 30th and 32nd Squadrons of the 19th Bombardment Group.

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ACTIVITIES OF 88TH RECONNAISSANCE SQDN.

School days are here again for members of the 88th Reconnaissance Squadron at Hamilton Field, Calif. With new problems every day arising from the previously unheard of performance of the B-18 Bombardment airplanes, further training of everyone in the Squadron becomes imperative, from those with the most experience down to the newest arrival.

First Lieut. Ronald R. Walker left Hamilton Field by air on January 8th for Maxwell Field, Ala., where he was scheduled to pursue the two weeks' course in Naval tactics at the Air Corps Tactical School.

Two experienced airplane engine mechanics - Privates, 1st Class, Ernest G. Werner and Reed Werner - were placed on detached service for three months at the Rockwell Air Depot, Calif., where they will take a refresher course for airplane engine mechanics.

Nine officers of the Squadron are attending the Celestial Navigation School of the 7th Bombardment Group. They are Lieuts. Robert H. Kelly, Leslie O. Peterson, John B. Cary, Arthur V. Jones, Jack L. Randolph, George E. Pierce, Howard F. Bronson, Ted S. Faulkner and Alban B. Ogden.

Five men of the Squadron were detailed to attend the airplane engine school, conducted by Base Headquarters and 5th Air Base Squadron, starting January 16, 1938, viz: Privates Merrill B.Simonsen, Charles L. Raboin, James R.Rawlins, H.C. Clementson and William C. Olcott.

BUZZARD MAKES DEEP IMPRESSION ON AN A-17

Believe it or not, but this latest report from the 37th Attack Squadron seems to prove that considerable damage can be done by a bird, such as a buzzard or a sea gull, to a thin-skinned metal airplane in flight - in this case an A-17.

The incident occurred shortly after take-off on a routine local flight at Langley Field, Va. The pilot, Lieut. H.E. Watson, tried his best to avoid a flock of birds, but the lesser breed must have dodged the same way, and he hit one buzzard with the right horizontal stabilizer. After returning to the field, the pilot was amazed to find that the damage consisted of a large dent, six inches deep, in the leading edge of the right horizontal stabilizer, the impact being sufficient actually to break the skin.

Upon examining the damaged stabilizer, it would seem that the cause of the damage was a flying bag of hard cement instead of a scant four or five-pound bird. The internal damage to the horizontal stabilizer section is not now determinable, but the longerons and stabilizer assembly of the airplane were not damaged at all.

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Mosaic Mapping Project

(Continued from Page 5)

rolls of the exposed film were ruined by cam failure which left the shutter stuck open. Since the 18th, the weather has been so cloudy that it has prevented the continuation of the mission. Further progress on the project will be reported.

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20TH PURSUIT GROUP LOSES ITS P-26's

Led by Major Armin F. Herold, Commanding Officer of the 79th Pursuit Squadron, 14 pilots of the 20th Pursuit Group, GHQ Air Force, Barksdale Field, La., flew P-26A airplanes to the West Coast for delivery to the Rockwell Field Air Depot. The Barksdale Field Correspondent expresses regret over seeing these excellent little planes go, but finds some consolation in the rumors of new type of Pursuit ships to be delivered in the future to the 20th Pursuit Group.

One of the highlights of the return trip to Barksdale Field, via C-33, was the overnight stay in Tucson, Arizona. It seems that some members of the party were not equipped with the necessary lead-lined digestive tract to cope with the Mexican foods in which they indulged.

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Colonel Hugh J. Knerr, Air Corps, was relieved from further assignment and duty with the GHQ Air Force, Langley Field, Va., February 1, 1938, and assigned to the Headquarters of the 8th Corps Area at Fort Sam Houston, Texas.

Thus far a total of 121 students (100 candidates from civil life and 21 enlisted men of the Army) have qualified for appointment as Flying Cadets and comprise part of the class to begin the course of training at the Air Corps Primary Flying School at Randolph Field, Texas, on March 1, 1938. It is anticipated that additional applications for flying training from qualified candidates will be received during the month of February, and that the size of the March class will be in excess of 200 students.

Students undergoing flying training at the Air Corps Training Center pass through a four months' primary flying course and a four months' basic course at Randolph Field, followed by a four months' advanced course at the Air Corps Advanced Flying School at Kelly Field, Texas.

Upon the successful completion of flying training, a flying cadet is discharged from the service, rated an "Airplane Pilot" and given a commission as a second lieutenant in the Air Corps Reserve.

Within the limit of appropriations, graduates of the Air Corps Training Center, after being commissioned in the Air Corps Reserve, are ordered to extended active duty with Air Corps tactical squadrons, during the course of which they have the privileges, pay and allowances of a second lieutenant in the Air Corps, Regular Army, which includes fifty percent additional pay while on duty requiring participation in flights. Under existing law, such active duty may be for a period of not more than five years. Upon the termination of a period of active duty of not less than three continuous years, an Air Corps Reserve officer shall be paid a lump sum of $500, which sum shall be in addition to any pay and allowances which he may otherwise be entitled to receive. In accordance with the law governing promotion of officers in the Army, Air Corps Reserve officers, upon the completion of three years of active duty, are promoted to the rank of first lieutenant.

The sum of $500 paid an Air Corps Reserve officer upon the termination of three or five years of active duty, when he revents to inactive status, is in the nature of a bonus in order to tide him over financially for a period of time reasonably anticipated it will require him to obtain a permanent position in civil life, either in the field of commercial aviation or in some other occupation for which he may be fitted.

According to statistics, approximately 55% of the pilots employed by commercial airlines have either graduated from the Air Corps Training Center or from Army flying schools prior to the establishment of the Air Corps Training Center in Texas. The scheduled airline operators count very largely on graduates of the Air Corps Training Center, including those now on active duty and those who have completed their active duty tours, to fill vacancies in the piloting ranks of their organizations.

Just recently, one airline executive informed the Air Corps that he would take fifty co-pilots for his airline at once, if he could get them, and give them a salary of $200 per month at the start, with assured promotion and salary increases. He expressed a desire for men who graduated from the Air Corps Training Center and who completed active training with Air Corps squadrons.

At the present time there are more positions as pilots on commercial airlines in sight than there are qualified pilots to fill them. Commercial companies usually require applicants for positions as co-pilots on their airlines to have a total of at least one thousand hours piloting time to their credit. Air Corps Reserve officers completing three years of active duty with tactical squadrons usually have this minimum amount of pilot flying hours to their credit and are thus able to meet the requirements of airline operators in this regard.

Not only are flying cadets of the Air Corps given free instruction and furnished food, shelter and clothing while undergoing flying training, but they are paid $75 per month while at the Training Center undergoing instruction. Men between the ages of 20 and 26, who can pass the required physical examination and possess at least two years' college education, or who can pass an examination which is the equivalent thereof, are admitted to the Air Corps Training Center as Flying Cadets.

The candidates who have thus far qualified for appointment as flying cadets are being directed to enlist as such at the military activity nearest them and to report to the Air Corps Primary Flying School at Randolph Field, Texas, on March 1, 1938, for assignment to the March Class.

For the first time in the history of the operation of the Air Corps flying schools, the State of West Virginia has the largest delegation of native sons in a class beginning flying training. This distinction heretofore was usually a nip and tuck affair between the States of California and Texas, and West Virginia's representation in various entering classes did not exceed two or three students. With 21 West Virginians qualifying for the March, 1938, class, and with bright prospects of this number being increased before the class actually begins work, West Virginia's nearest competitor in State representation is Texas with 15 students, followed by California with 11 students.

This sudden rise of West Virginia into prominence at the Air Corps Training Center may be attributed to the keen interest in the Army Air Corps of the Assistant Secretary of War, Hon. Louis Johnson, himself a native of that State. Alive to the great need of pilots in the Air Corps, it was through Mr. Johnson's suggestion that publicity regarding the great advantage to air-minded young men of the course of flying training at the Air Corps Training Center was spread throughout that State. As a result of this publicity, seventy young men presented themselves for examination for a Flying Cadet appointment, and of this number forty passed the physical examination. It is anticipated that about ten more students will be added to the West Virginia delegation at the Primary Flying School at Randolph Field before the new class begins work.

The candidates who have thus far qualified

for a flying cadet appointment are enumerated, as follows:

Hornsby, Claude E., Jr.	Centerville, Ala.
Worthy, Lionel D.	Fyffe, Ala.
Jackson, George	Tucson, Ariz.
McNay, Kenneth	Camden, Ark.
Hall, Byron E.	Campbell, Calif.
Wilson, Harold F.	Los Angeles, Calif.
Ford, Ernest G.	Pacific Beach, Calif.
Oliver, Ralph L.	Palo Alto, Calif.
Gilmore, Jean D.	Redding, Calif.
Horne, Winfree A.	Santa Barbara, Calif.
Paul, Samuel C.	Santa Barbara, Calif.
Parker, Kingston E.	San Francisco, Calif.
DeMattei, John	Stockton, Calif.
Gutru, George H., Jr.	West Los Angeles, Calif.
Bergeson, Bernhardt T.	Denver, Colo.
Kelly, George V.	Denver, Colo.
Sanders, Herschel E.	Manchester, Conn.
Laverty, Robert A.	New London, Conn.
Von Sabo, Alader A.	Shelton, Conn.
deRussy, John H.	Washington, D.C.
Manson, Hugh B., Jr.	Jacksonville, Fla.
Braswell, Thomas E.	Atlanta, Ga.
McCullough, Hilliard B.	Atlanta, Ga.
Peoples, Thomas J.	Chatsworth, Ga.
Roberts, Albert J., Jr.	Champaign, Ill.
Potter, Phillip O.	Chicago, Ill.
Swanson, William H.	Chicago, Ill.
Wilmot, Woodrow B.	Dunlap, Ill.
Smith, J. Wallace	Fenton, Iowa
Cassell, Raymond W.	Baxter Springs, Kans.
Mueller, Robert B.	Wichita, Kans.
Stinson, William E.	Baton Rouge, La.
Benois, Royal Victor	Shreveport, La.
Stansbury, William G.	Shreveport, La.
Whatley, Frank A.	Slagle, La.
Bourgoin, Raoul J.	Dover-Foxcroft, Me.
Philbrick, Frederick E.	Brookline, Mass.
Draper, Harry E.	Hyannisport, Mass.
Reed, John DeL.	Ann Arbor, Mich.
Buethe, George M.	Northfield, Minn.
Bergdahl, Clyde	St. Paul, Minn.
Evans, John S.	St. Paul, Minn.
Randall, Heman W., Jr.	Helena, Mont.
Clark, Eugene L.	Omaha, Neb.
Schroeck, Franklin E.	Buffalo, N.Y.
Mallinson, Hiram R.	New York, N.Y.
Thiele, Harold E.	South Cairo, N.Y.
Heber, Malcolm M.	White Plains, N.Y.
O'Neill, Brian	Yonkers, N.Y.
Kamperman, Ralph, Jr.	Cleveland, Ohio
Opell, Charles M.	Cleveland, Ohio
Carter, Roy M.	Britton, Okla.
Fritts, Jack B.	Norman, Okla.
Bartlett, Rex A.	Oklahoma City, Okla.
Johnson, James A.	Wagoner, Okla.
Carley, Alan E.	Medford, Ore.
McGaughey, Samuel K.	Roseburg, Ore.
Ireland, Loren E.	Salem, Ore.
McCulley, James G.	Anderson, S.C.
Roberts, Wagner H.	Hartsville, S.C.
Chiles, Clarence S.	Corryton, Tenn.
Ryan, James L., Jr.	Nashville, Tenn.
Trim, Kermit M.	Tiptonville, Tenn.
Gayle, Charles A.	Bellaire, Texas
Bond, Charlie R., Jr.	Dallas, Texas
Riddle, Kyle L.	Decatur, Texas
Bradshaw, Thomas Eugene, Jr.	Houston, Texas
Kellogg, Charles W.	McAllen , Texas
Bogan, Charles Wm.	McLean, Texas
Lane, William, Jr.	Marshall, Texas
Schriever, Gerhard J.	San Antonio, Texas
Coppage, Edwin S.	Shamrock, Texas
McChrystal, William A.	Salt Lake City, Utah
Barnes, Samuel G.	Lexington, Va.
Reed, Charles W.	Raymond, Wash.
Flowers, Noel Q.	Silverdale, Wash.
Roe, Theodore W.	Spokane, Wash.
Murrell, Carroll T.	Barrackville, W.Va.
Poling, Okey J.	Belington, W.Va.
Rhoades, Harold W.	Cedarville, W.Va.
Haller, Earl S., Jr.	Charleston, W.Va.
Moore, Kenneth C.	Clarksburg, W.Va.
Briel, Phillip G.	Fairmont, W.Va.
Marshall, Charles S.	Grafton, W.Va.
Marcum, Jack M.	Hamlin, W.Va.
Cook, Ralph	Hewitt, W.Va.
Moore, Archibald W.	Huntington, W.Va.
Smith, Thomas C.	Marlinton, W.Va.
Coulter, Emil	Maysel, W.Va.
McCullough, Kenneth K.	Mole Hill, W.Va.
Lippucci, Fred H.	Morgantown, W.Va.
Guyton, John A.	Newell, W.Va.
Hindson, William S.	Oak Hill, W.Va.
Bond, Richard D.	Rock Cave, W.Va.
Willman, John W.	Rawlesburg, W.Va.
McQuaid, Lynn, Jr.	Salem, W.Va.
Gillum, Virgil M.	Shinnston, W.Va.
Gregg, Guy K.	Weston, W.Va.
Buckles, James R.	Milwaukee, Wis.

Roy, Eugene L.	Albrook Field, Panama C.Z.

Note: All candidates listed above are from civil life.

Flying Cadets - Enlisted Men

Hoehne, George G. — San Francisco, Calif.
Base Hqrs. and 6th Air Base Squadron, Hamilton Field, Calif.

Pinter, Joseph A. — Georgetown, Ill.
Medical Dept., Sta. Hospital, Selfridge Field.

Clark, Joseph W. — Golconda, Ill.
52nd School Sqdn., Randolph Field, Texas

Rakestraw, William C. — Peoria, Ill.
Hqrs. & Hqrs. Sqdn. Selfridge Field, Mich.

Lewis, Dwight F. — Corning, Iowa
52nd School Sqdn., Randolph Field, Texas

Engstrom, Walter F. — Detroit, Mich.
Base Hq. & 3d Air Base Sq. Selfridge Field

McClure, William A. — Royal Oak, Mich.
17th Pursuit Sqdn., Selfridge Field, Mich.

Bruce, James R. — Saginaw, Mich.
Base Hq. & 3d Air Base Sq. Selfridge Field

Armstrong, George H. — Polytechnic, Mont.
Base Hq. & 5th Air Base Sqd. Hamilton Field

Harman, Harold M. — Gallup, N. M.
Base Hq. & 9th Air Base Sq. Moffett Field

Keiser, Donald McKay — McComb, Ohio
Hq. & Hq. Sqdn., Randolph Field, Texas

Stiles, Joseph E. — Red Lion, Pa.
Base Hq. & 1st Air Base Sq., Langley Field, Va.

Cickavage, Peter — Frackville, Pa.
2d Staff Squadron, Bolling Field, D.C.

Iacone, Frank L. — Providence, R.I.
29th Bomb. Squadron, Nichols Field, P.I.

Sneed, Charles R. — Evant, Texas

Jenkins, Harry A. — Montalba, Texas
11th Air Base Sqdn., Randolph Field, Tex.

Howell, James P. — Lubbock, Texas
Battery A, 82d Field Art., Ft. Sam Houston.

Enlisted Men (Continued)

Howell, Woodrow G. Lubbock, Texas
Battery A, 82d Field Art. Ft. Sam Houston.
Willsie, Harold Fort D.A. Russell, Texas
Hqrs. & Hqrs. Battery, 77th Field Artillery, Fort D.A. Russell, Texas.
Hardy, Otha B., Jr. Houston, Texas
53d School Squadron, Randolph Field, Texas
Veatch, Bernard W. Conde, S.D.
82d Obs. Sqdn., Moffett Field, Calif.

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MR. IDE LECTURES ON FOREIGN AIRCRAFT DEVELOPMENT

Mr. J.J. Ide, Technical Assistant in Europe for the National Advisory Committee for Aeronautics, with office at Paris, France, arrived at Wright Field, Dayton, Ohio, on January 11th.

Mr. Ide's visit has for many years been an annual event, and his lecture to the officers and engineers of the Materiel Division on foreign aircraft development is always eagerly looked forward to. With the accelerated foreign aircraft procurement programs in operation at the present time, the lecture this year was of particular interest. Conference with officers followed the lecture. Brigadier General A.W. Robins, Chief of the Materiel Division, introduced Mr. Ide, stating that this was his fourteenth visit to the Division.

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BROADCASTING FROM A HIGH ALTITUDE

A successful broadcast from the Lockheed XC-35 substratosphere airplane was accomplished on January 22nd by Major Carl F. Greene and Lieut. E.H. Beebe, the plane being piloted by Lieut. L.F. Harman and the broadcast being made while flying at an altitude of 21,000 feet over Chicago, Ill.

The windows of the plane were frosted with ice, and the outside thermometer indicated a temperature of 15 degrees below zero. Inside the supercharged cabin, however, the passengers rode in comfort. Because of the engine noise, the broadcasters spoke with their mouths almost against the microphone, so that no one in the plane heard what the other was saying, except Lieut. Harman. Holding the big plane steady in somewhat rough air conditions, he smilingly heard everything on his radio receiver, which was tuned in on a Chicago broadcasting station. The broadcast was effected over the National Broadcasting Company network.

Announcement of the opening of the International Air Show, held at Chicago January 28th to February 6th, was made during the broadcast.

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Circulars were issued to aircraft manufacturers by the Materiel Division, Wright Field, on January 18th, inviting bids on 2-engine attack Bombers. This is a new Air Corps type of airplane to be constructed especially for attack and light bombing purposes. The bids were to be based on quantities of from one to five hundred in increments of ten. The opening of the bids is scheduled for March 17, 1939.

LECTURES BY WRIGHT FIELD PERSONNEL

Materiel Division officers and engineers presented papers at annual meetings of both the Society of Automotive Engineers and the Institude of Aeronautical Sciences during January.

Captain George V. Holloman's paper, presented at the Society of Automotive Engineers' meeting in Detroit on January 10th, was entitled "Automatically Controlled Blind Landings."

The following papers were read at the meeting in New York City on January 27th of the Institute of Aeronautical Sciences:

"Full Feathering Propellers," by Lieut. H.M. McCoy, of the Propeller Unit.

"Supercharging a Pressure Cabin Airplane," by Captain A.H. Johnson, of the Engineering Procurement Branch.

"Physiologic Considerations Governing High Altitude Flight," by Dr. J.W. Heim, of the Physiological Research Laboratory.

Captain H.A. Armstrong, Director of the Physiological Research Laboratory, Materiel Division, also read a paper.

Major Carl F. Greene was chairman of the session featuring the discussion of aircraft under high altitude conditions.

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NIGHT CLASSES IN ADVANCED AERODYNAMICS

"Night" classes in advanced aerodynamics, with special reference to the fluid in motion known as air, have been conducted through the winter months in the Air Corps Engineering School classrooms at Wright Field, Dayton, O. The seventeen students in attendance are from the various engineering departments of the Materiel Division. Classes started in October and will last through May.

Prerequisites for the course are advanced mathematics, including differential equations. Classes are held one afternoon each week, after working hours, from 3:45 to 5:45 p.m.

Ezra Kotcher, Associate Professor of the Air Corps Engineering School, is the Instructor.

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GIANT BOMBER INSPECTED AT MATERIEL DIVISION

After its arrival at the Materiel Division, Wright Field, Ohio, about the middle of December, the giant Boeing B-15 was hurried to the assembly hangar and was immediately put through the complicated process known as "engineering inspection."

In order to expedite this work, during which as many as 18 engineers were sometimes busy simultaneously in the fuselage while various others were perched upon landders examining exterior parts, signs were placed about enjoining all others to keep away. "It is thought," says the News Letter Correspondent, "that this preliminary work, which forms so vital a part in the collaboration of data on a new airplane, will be completed by the end of January."

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Major General O. Westover, Chief of the Air Corps, arrived at the Materiel Division on the afternoon of January 11th, and remained for several days.

NAVIGATION TRAINING FLIGHT OF CLASS 38-A

Students of the Observation Section of the Air Corps Advanced Flying School, Kelly Field, Texas, departed on schedule for their extended navigation training flight, under the supervision of Captain R.E. Randall, senior instructor of Observation, 1st Lieut. E.R. Todd and 2nd Lieut. A.R. Walker.

The flight of 18 students left Kelly Field on January 17th, planning to fly to El Paso, Texas, via Midland; then back through Midland to Hensley Field, Dallas, Texas, to remain over one day for maintenance. From Hensley Fieldthey planned to fly to Houston, Corpus Christi and back to Kelly Field.

The following students made the flight:

Captain C.M. Travassos (Brazilian Army)
2nd Lieuts. J.H. Gray and J.R. Gunn

Flying Cadets

D.L. Anderson	D.J. French	R.D. Dick
H.J. Konopacki	J.W. Haskett	N.H.Ranck
W.K. Richardson	P.W. Tibbets	J.A.Tobler
M.E. Wanamaker	H.M. Keeffe	E.C. Voltz
R.A. Kummrow	R.N. Maupin	M.S. Zipp

The three mechanics accompanying the flight were Staff Sergeant S.W. Boggs, Privates R.C. Hajovsky and H.L. Kirkbride The flight was composed of 21 airplanes, nine of which were O-25's and twelve BT-9's.

The first echelon of the Pursuit Section, led by Major John V. Hart, 1st Lieut. N.P. Jackson and 2nd Lieut. R.W. Osborn, left Kelly Field on January 19th, planning to fly from Kelly to Hensley, via Corpus Christi and Houston the first day, and on the following day from Hensley Field to El Paso, via Midland, remaining over one day at El Paso for maintenance, and from there returning to Kelly Field via Midland. The flight is composed of 17 BT-8 airplanes. The following students made the flight:

2nd Lieut. H.R. Melton, Jr.

Flying Cadets

R.A. Ames	Don Coupland
H.B. Armstrong, Jr.	N.A. Cowles
G.G. Atkinson	W.J. Feallock, II
E.H. Beverly	R.S. Garman
D.D. Brannon	G.B. Greene, Jr.
James Breathitt, III	H.M. Hays
W.C. Clark	

The three mechanics accompanying the flight were Staff Sergeant A.D. Bivins, Corporal R. Rose and Private S.E. Anderwald.

Weather permitting, the Attack Section was scheduled to depart on January 24th on their navigation training flight, led by Captain G.C. Jamison, assisted by 1st Lieut. C.H. Pottenger and 2nd Lieut. W.D. Griffith. The sixteen students listed below were to make the flight in 9 A-12's and 10 A-18's, viz:

2nd Lieuts. G.H. Austin and G.P. Culver.

Flying Cadets

J.C. Bailey	J.C. Bowen	H.G. Emmens
A.J. Heintz	J.C. Marcy	R.J. Mason
J.V. Edmundson	E.T. Pardee	R.D. Taylor
C.E. McPherson	A.D. Reedy	G.W. West
C.C. Sturges,Jr.	W.T. Rison	

Enlisted mechanics accompanying the flight: Corporal A.I. Murin, Privates H.C. West and E.A. Heintz.

Itinerary: Kelly Field to Hensley Field, via Corpus Christi and Houston; from Hensley Field, via Midland, to El Paso, remaining over here one day for maintenance and returning on January 27th to Kelly Field from El Paso via Midland.

The second echelon of the Pursuit Section was also scheduled to leave on January 24th, weather permitting, led by Captain B.M. Hovey, assisted by 2nd Lieuts. M.F. Staldor and W. Eades. The thirteen students (Flying Cadets) making the flight are listed below, viz:

N.E. Kearby	M.F. McNickle	F.C.Parker,Jr
H.E. Kofahl	M.B. Marks	C.C. Wasem
W.W. Korges	K.R. Martin	J.R. Watt
G.M. MacNicol	R.L. Pusey	T.S.Proxmire,Jr
	Hamilton McClure	

Enlisted mechanics accompanying the flight: Staff Sergeant T.J. Rogers, Privates M. Cummings and C.C. Maranville.

Airplanes comprising flight: 16 BT-8's.

Itinerary: Kelly Field to Midland to El Paso first day; following day to Hensley Field, via Midland, remaining over one day for maintenance; Hensley Field to Kelly Field via Houston and Corpus Christi.

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72ND BOMB. SQDN. RECEIVES HIGHEST RATING

The 72nd Bombardment Squadron, stationed at Luke Field, T.H., commanded by Major Oliver P. Gothlin, Jr., who succeeded Major I. H. Edwards, was determined as the highest rated squadron in the 5th Composite Group for the training year, ending October 31, 1937. This organization will be awarded the Department Streamer to be carried on its guidon.

There was considerable hard work connected with winning the above mentioned award. The entire personnel of the Squadron feel that they have been justly repaid for their efforts.

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In a B-17 "Flying Fortress" with a full combat crew, Captain Darr H. Alkire, 96th Bombardment Squadron, Langley Field, Va., on January 5th, accomplished a night navigation, bombing and machine gunnery mission to Maxwell Field, Ala., and return, without landing at Maxwell Field. The bombing was accomplished at 15,000 feet, and all members of the crew fired machine guns.

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During the month of December, 1937, the Engineering Department of the San Antonio Air Depot, Duncan Field, Texas, overhauled 13 airplanes and 25 engines and repaired a total of 31 airplanes and 9 engines.

"AND I LEARNED ABOUT FLYING FROM THAT"

En route from the Rockwell Air Depot, Coronado, Calif., to Lordsburg, New Mexico, in a C-33 Transport plane, with Sergeant C.C. Cunningham and Private 1st Class Yates as his companions, Staff Sergeant Arthur Hanson, Air Corps, was forced to land at Gila Bend, Arizona, due to engine trouble.

Staff Sergeant Hanson stated that about ten miles west of Gila Bend the left engine became very rough, noisy, and the cylinder head temperature went up to 350° C. "I cut the switch on left engine," he added, "turned selective fuel cock valve to right engine, propeller to low pitch - right engine r.p.m. to 1900. Attempted continuance of flight to Tucson at 7000 feet, but could not retain original altitude due to mild thunder storms and rough air, was losing altitude at the rate of 200-400 ft. per minute. Dumped main tanks, approximately 195 gals., with no appreciable decrease in altitude loss (Airspeed 90-100). After 20 minutes of flying I was forced to return to Gila Bend and land. Before engine trouble occurred the instruments read as follows: Right engine: Tach.1750; Manifold press. 25"; oil press. 60 lbs.; oil temp. 55°C; Cyl. Hd. Temp. 175°C; Carb. temp. 45°C; fuel press. 4 lbs. Left engine: Tach. 1750; Manifold pressure, 26.5"; oil pressure 55 lbs.; oil temp. 35°C.; Cyl. Hd. temp. 125°C.; carb. temp. 45°C.; fuel pressure 4 lbs. (Outside air temp. 18°C). (Dew point approx. 70 - reported). Upon landing at Gila Bend left engine was inspected and found one spark plug missing on Number 1 cyl. (rear plug). Threads in spark plug port were undamaged. New spark plug installed, and all spark plugs on both engines checked for looseness, and valves checked on left engine. Engine run-up O.K."

In view of the statement in the first paragraph, page 86, of Technical Order 01-40N-1, that level flight can be maintained with one engine at 8775 feet and of the fact that after the pilot dumped the main tanks there remained a comparatively light load in the airplane, the report of this forced landing was referred to the Air Corps Materiel Division for comment on the pilot's statement that he could not maintain his altitude when flying on one engine below an altitude of 7,000 feet.

The Materiel Division states that the horsepower available at 7000 feet at 1900 RPM, full throttle, under standard conditions with 1.1 deg. C. carburetor air temperature would have been 625 HP. This power corrected for the 45 deg. carburetor air temperature reported would be 580 HP, assuming no detonation as a result of the excessively high carburetor air temperature.

The horsepower available, had the pilot been able to obtain 1950 RPM, the rated speed of the engine, would have been 645 HP under standard conditions or 598 HP corrected for 45 deg. C. carburetor air temperature, again assuming no detonation.

However, in view of the high carburetor air temperature of 45 deg. C., which is 10 deg. C. in excess of the maximum set forth in Technical Order 02-1-5, detonation was probably encountered which tended to lower the horsepower still more below the maximum to be obtained under the conditions reported, assuming no detonation. With the outside air temperature of 18 deg. C. as reported, the amount of carburetor air heat used was excessive for full throttle operation of the engine.

Under the conditions stated in the flight report, it is not surprising that the airplane was unable to maintain flight on one engine. The loss of 65 HP due to operating conditions of the engine would reduce the rate of climb by 115 feet per minute. Such a reduction in rate of climb, combined with rough air conditions, would have made it practically impossible to maintain level flight on one engine. Assuming that the altitude of 7000 feet at which the pilot attempted to fly was pressure altitude, the density altitude corresponding to the indicated altitude and the reported temperature of 18 deg. C. was 9000 feet.

Level flight can be maintained at 8775 feet with one engine under standard atmospheric conditions with the engine turning at 1950 RPM and at full throttle power.

The change in the rate of descent caused by dumping 195 gallons of gasoline would hardly be noticeable. It is estimated that the rate would be reduced about 15 ft. per minute.

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ASST. SEC. OF WAR VISITS HAMILTON FIELD

The Hon. Louis A. Johnson, Assistant Secretary of War, paid a flying visit recently to the Hamilton Field Air Base, enroute to Portland, Oregon. Mr.Johnson had been inspecting Army posts and Air Corps stations on the West Coast and had made several speeches in this area on defense measures. Intending to fly north to Portland from Hamilton Field, he was prevented from doing so by adverse weather conditions, and left by train on the afternoon of January 10th.

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The students of the present class at the Air Corps Advanced Flying School, Kelly Field, Texas, will graduate on February 16, 1938. There will be 61 students in the graduating class. Further details in this connection will be announced later.

NEW NAVIGATION CLASSES AT HAMILTON FIELD

Aviation is looking to the sea and the methods of old mariners to add to its knowledge of navigation in the air. New classes, to last six weeks, were begun the first of the year at Hamilton Field, San Rafael, Calif., in Dead Reckoning and Celestial Navigation, 33 pilots attending. The former is under the guidance of Lieut. Walter R. Agee and Lieut. Jack L. Randolph, and Lieut. Paul C. Ashworth instructs the latter class.

Dead reckoning, which is studied first, has a definite maritime origin, being originally "Deduced Reckoning," a term used by old mariners, and coming eventually to be abbreviated to the present Dead Reckoning. Mariners deduced their position at sea, just as now in aviation the term means calculating position in the air by "keeping track" through navigation instruments installed on the airplane, from a known point where the flight is begun. The instruments included are those which indicate speed, drift, altitude, and temperature.

Celestial Navigation, as the name indicates, is a means of calculating position by the sun, the stars, and the planets.

By the use of both these ancient but wise means of navigation, any defect in one is compensated by the other. Dead Reckoning can be considered an accurate method only up to 500 miles of the starting point of the flight, whereas Celestial Navigation can be performed any place in the world at any time.

The classes are interesting and highly important to the safety of men and equipment of the Air Corps, as well as making for greater efficiency in accomplishing the task required of pilots of a GHQ Air Force unit - that is, to fly to a designated point by the shortest possible route in the shortest possible time.

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EASY IDENTIFICATION OF AIR CORPS PLANES

Residents of Michigan, accustomed to the spectacle of the small drab Pursuit airplanes of the 1st Pursuit Group, are receiving what might be called a "treat for sore eyes," since the various squadrons have adopted distinguishing colors for their aircraft. In order to help identification in the air and on the ground, each squadron has adopted a distinct color which adorns the nose of the airplane. The cowlings around the motor are painted with this color, the 17th Squadron using white; the 27th, orange; and the 94th, red. In combination with the yellow wings and blue fuselages of all Army aircraft, these new colors present, to say the least, a startling aspect.

In addition to the distinctive colorings used, orders were issued by higher authority that each Army airplane will carry large identifying numbers on the upper and lower surfaces of the left wings, as well as on both sides of the vertical stabilizer. These numbers consist of two letters identifying the organization to which the airplane belongs and an additional number which is the airplane's squadron number. Any airplane in the General Headquarters Air Force may now be identified at a glance.

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VARIED DUTIES OF RECONNAISSANCE SQDNS.

As the eyes of the GHQ Air Force, members of the 88th Reconnaissance Squadron of Hamilton Field are rapidly becoming jacks of all trades and masters of most of them.

In former days, officers of the 88th would fly 25 miles, take a photograph and return. Now pilotage, photography and radio operation training are merely kindergarten courses.

Nautical almanacs have replaced maps for the present day navigator. With sextants and drift sights, long flights over water or other featureless terrain are now commonplace, where only a few years ago such flights would have been extremely hazardous. Pilots of the 88th 88th Reconnaissance Squadron no longer fly only small Observation airplanes. Now they must at any time be ready to fly a basic training ship or a Douglas B-18, land a Douglas OA-4A in a cow pasture, or a Sikorsky YlOA-8 in rolling seas. The observer not only "observes" and photographs, but also is a co-pilot and a bombardier.

Even their language has changed for those in the 88th Squadron. Throttles are pulled back in the BT-9, but are moved aft in the YlOA-8. The door is on the left in the B-18, but on the port side in the OA-4A. To the old observer, the target was five statute miles, 90 degrees right; now it is five nautical miles abeam.

"We of the 88th still considered ourselves observers, however, until last week," declares the News Letter Correspondent, "when, after parachute drill, fire drill and general emergency drill - we had life boat drill. Ahoy, Shipmates!"

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War Department Orders, recently issued, announce the termination, effective February 28, 1938, of duty of Brig. General Gerald C. Brant as Wing Commander of the 2nd Wing, GHQ Air Force, Langley Field, Va., and his assignment to duty, March 1, 1938, as Commandant of the Air Corps Technical School, with station at Chanute Field, Rantoul, Ill., directing and supervising both the Chanute Field and Denver (Colorado) branches of that School, with the rank of Colonel.

NO CHENEY AWARD FOR 1937

There will be no grant of the Cheney Award for the year 1937, the Chief of the Air Corps, Major General Oscar Westover, announced recently, adding that while there were several instances during the calendar year 1937 where Air Corps personnel performed heroic feats in connection with flying which involved risk of life, the Board of Officers appointed by him to select the person most meriting the Cheney Award, after careful consideration recommended that none of these cases exactly satisfied nor distinctly merited the Cheney Award.

The terms of the grant of this distinguished Trophy particularly state that it shall be awarded to the officer or enlisted man in the Army Air Corps, Regular or Reserve, for an act of valor of extreme fortitude or self sacrifice in a humanitarian interest, not necessarily of a military nature, but which shall have been performed in connection with aircraft.

The Cheney Award was established in memory of 1st Lieut. William H. Cheney, Air Corps, who was killed in an air collision at Foggia, Italy, on January 20, 1918. The donors of the award are Mrs. Mary L.C. Scofield, of Peterboro, N.H., and Mrs. Ruth Cheney Streeter, of Morristown, N.J., the mother and sister, respectively, of the deceased officer. They have jointly set aside a trust fund of $15,000, the interest accruing therefrom to be used to make the award, which is bestowed annually by the Chief of the Air Corps. The sum of $500 goes to the recipient along with a bronze plaque bearing the engraved name of the individual receiving it, together with a certificate of award.

The Cheney Award has been made annually since 1927, except for the years 1930 and 1934, when no awards were made for the same reasons as those prevailing this year, there having been no acts or incidents which seemed exactly to fit the terms of the grant or distinctly to merit it.

Master Sergeant Harry A. Chapman, of the 19th Airship Company, Langley Field, Va., was the first to receive this honor. It was granted to him for his heroism, presence of mind, and extreme fortitude during the great catastrophe on February 21, 1922, when the Airship ROMA crashed and burned. In subsequent years the honor has gone to Captain Ural G. Ent, Air Corps, for 1928; Captain William A. Matheny for 1929; to 1st Lieut. Robert D. Moor (posthumously) and to Private John B. Smith for 1931; to Private Arden M. Farley for 1932; jointly to the late Lieut. W.L. Bogen, Staff Sgt. Doy D. Dodd and Sgt. Thomas J. Rogers for 1933; to the late Lieut. Robert K. Giovannoli for 1935, and jointly to Major Frederick D. Lynch and Staff Sgt. Joseph L. Murray for 1936.

FAIRFIELD AIR DEPOT BLOCK TEST BUILDING

The Fairfield Air Depot, Fairfield, O., is enjoying the facilities of a new and modern Block Test Building, which is constructed upon the original ideas of Major Ralph B. Walker, Chief Engineering Officer. This Block Test Building is located in the extreme north end of the field, approximately one-half mile from the shops. This eliminates the noise experienced when the Block Test was adjacent to offices and shops.

The Block Test Building is constructed of steel, tile and brick and contains eight torque stands of an improved type. The operator's rooms are sound-proof, amply heated, lighted and well ventilated. They are equipped with all modern recording instruments, including oil scales, gasoline flow meter and overhead oil supply system. All test stands are equipped with protective screen and the only access to the engines is through the operator's room. A complete overhead monorail system is installed enabling the conveyance of engines to any desired place in the building.

The building is equipped with a central steam plant for supplying heat to the building and test stands. A department for final preparation of engines for installation, storage and inspection will be added in the near future.

Captain R.E. Culbertson reports that the entire Engineering Department personnel is grateful for the relocation of the Block Test and the resulting improved working conditions.

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BOMBARDMENT SQUADRON MOVES TO HAWAII

In furtherance of its plans to build up Composite Wings of the GHQ Air Force in the Hawaiian Islands and Panama, the War Department, on January 20, 1938, ordered the 31st Bombardment Squadron from Hamilton Field, Calif., to the Hawaiian Department. This Squadron is equipped with the latest type Douglas twin-engine Bombers, known in the Air Corps as the B-18. Since it is a permanent change of station, the movement of the Squadron to its new home will be made by transport about February 1st.

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The 17th Pursuit Squadron, Selfridge Field, Mich., claims to be one of the few squadrons in the Air Corps, if not the only one, which has the original source of its insignia on file, Sergeant Cipelle having lately shot a "Great White Snow Owl" at Selfridge Field itself. There being no radiator caps on the Seversky P-35's, the stuffed owl now adorns the Day Room in the barracks. It has for company a beautifully mounted dear head - shot last fall by Private 1st Class Chism. 'Tis an eight-pointer.

OVER WATER SAFETY DEVICES FOR AIRPLANES

Various over water safety devices for landplanes have been developed by the Air Corps from time to time. They include flotation systems for large, thick-wing airplanes, bag flotation equipment for smaller airplanes, pneumatic life rafts, and life preserver vests.

Flotation Tank Equipment

In order to provide buoyancy for the larger types of land airplanes in event of a forced landing on water, the airplane fuel tanks built in the wing are made to play a double part. Besides serving as the fuel source for operation of the engines, they may be transformed in case of emergency into flotation equipment. To accomplish this result, the pilot pulls a lever in the cockpit which actuates a quick release valve on a cylinder of CO_2. From the cylinder the expanding CO_2 flows to the gasoline dump valve mechanism which is located on the bottom of the gasoline tanks. The dump valves are thus pressed open, permitting the fuel to escape. When the dump valves open, the CO_2 is directed automatically to an inlet orifice located in the top of the gasoline tank. The opening in the inlet orifice is such that a constant predetermined pressure is maintained in the tank during discharge of the gasoline. After the gasoline has been discharged, the dump valves are closed to prevent entrance of water into the tanks. Besides the fuel tanks, air-tight tanks are built into the wing to provide additional buoyancy.

The chemical CO_2 is used because it is an inert gas and serves to reduce fire hazard. The system is such that the CO_2 may also be used for extinguishing a fire in the wings should such occur during flight.

Rubberized Flotation Bags

For smaller airplanes which are to operate over water, rubberized fabric bags are stowed in the wing. In case of an emergency landing on water, these bags are automatically released and inflated. This operation starts with a valve actuator on the bottom of the airplane. When the airplane is submerged to a depth of 14 inches or more, the water sets up air pressure in the actuator tube which opens the valve of a CO_2 cylinder. The tripping of the cylinder permits the flow of gas to that portion of the wing which forms the covering for the flotation bags. A piston is actuated which pulls out pins releasing the covering, then fills the bags which snap into place like balloons, on top of a monoplane wing or beneath the top wing of a biplane. An actuator tube is placed on top as well as on the bottom of the airplane so that the system is effective whether the forced landing is with the airplane in normal position or nosed over on its back.

Portable flotation gear for rescue and salvage crews normally carried in boats is also in use. CO_2 cylinders are carried in racks and connected with the flotation bags. The bags are protected by canvas covers which are hastily removed in case of emergency before the cylinder valve is opened, releasing the gas into the bags. The bags inflate almost instantaneously and are lashed to the airplane wing with ropes. One bag secured over the center section is sufficient for small and medium size craft. Bombardment and cargo airplanes may require two bags.

Life Rafts.

Standard equipment for over-water flying is a life raft constructed of latex rubber tubes covered with cotton duck and a rubberized fabric bottom. When the tubes are inflated a canoe-shaped boat is formed with raised bow and stern. Oars, which jointed together may be used as paddles, are provided. Three sizes of rafts for various size airplanes provide for the rescue of one, three, or six persons. The color is yellow to attract attention from the air. The rafts are stowed in easy reach of personnel, usually in the cockpit. The inner latex tubes are equipped with valves and manifolds for CO_2 inflation. The cylinder containing the CO_2 is attached to the raft and feeds directly into the tubes. The weight of the three sizes varies from 36 pounds for the smallest to 55 pounds for the six-passenger type. A short line is attached in order that when the raft is tossed into the water inflated, it may be kept from floating from the airplane until the person or persons have entered. The raft is encased in an easily removable canvas cover for protection when not in use.

Present plans include the stowing of the raft in a wing compartment - or side of fuselage - with automatic inflation and release. A pull of a lever in the cockpit will release pins which will cause the compartment door or cover to fall off, tripping the valve of CO_2 cylinder and causing the raft to inflate and be ejected from the compartment.

Each raft is equipped with an emergency signal kit containing six red flares and a pyrotechnic pistol. In one instance, a service flyer was kept afloat for five days by one of these rafts, at the end of which time he was sighted by a steamer and rescued.

Life Preserver Vest

The life preserver vest consists of a two-tube latex bladder with a fabric outer cover. The tubes form an inverted U, extending from the waistline in front, with the curve of the U around the neck. Although normally both tubes are inflated, one tube will keep a person afloat for an indefinite period of time. The second tube acts as a reserve in case of a lack of malfunctioning of the first tube.

Mouth tubes are also provided for emergency should the CO_2 cylinders for any reason fail. Small CO_2 cylinders (.280-oz. capacity) fit in holders attached to the vest.

The design, which brings the tubes around the back of the neck, insures that the person will float face-up in the water. In case he were rendered unconscious due to accident and fell face down in the water, he would immediately be turned face up.

The life preserver vest is worn under the parachute harness. It is inflated by the pull of a cord which is attached to the holder containing the CO_2 cylinder.

Jungle Kit

Designed especially for use in United States island possessions and Panama in case of a forced landing in the jungles, a jungle kit has been provided which would supply immediate necessities. This kit, which is incorporated in the parachute back pad, forming a cushion, is attached to the parachute harness. It is fastened with an inter-locking fastener.

Neatly placed in water-tight containers in this kit are sufficient condensed food rations to support life for two days, a small quantity of quinine and iodine, a prismatic compass, a large machete for protection, or for cutting ones way through thick jungle underbrush, a fishhook in case water is near, matches, a mosquito net for the head, and cartridges for the standard service revolver carried by Army personnel on such flights. Kit material is cotton duck, similar to that used in parachute pack.

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AIR CORPS EXHIBIT AT CHICAGO AIR SHOW

The Army Air Corps is being well represented at the International Air Show in Chicago, Ill., January 28th to February 6th. Nine bays, or approximately 5,000 square feet of the huge International Amphitheatre Building were allotted for Air Corps exhibits. Among the most important of these are two airplanes and an autogiro. The airplanes are a Curtiss Attack and a Seversky Pursuit of the most recent types. The autogiro is a new Kellett which is being studied by the Air Corps services for determination of its military value. A platform erected over the fuselage of the A-18 Attack plane enables visitors to view its interior with its myriad instruments and other items of equipment.

In addition to these airplanes, there is an exhibit of bombs in sizes from 17 pounds to 4,000 bombs, also .30 and .50 caliber aircraft machine guns and a .37 mm. aircraft cannon. A Pratt and Whitney engine has been sectionalized and motivated for the information of visitors, this offering an interesting study in progress when compared with the Wright Brothers' original 4-cylinder engine placed near it. The most modern types of two and three-bladed propellers and a nine-lens aerial camera and prints are outstanding items of interest. Two transparency cabinets present all the newest types of military airplanes, each cabinet containing 24 views. Moving pictures of Air Corps activities, with sound comments by Lowell Thomas and other commentators are shown twice a day.

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AIR BASE COMMANDER IN FORCED LANDING

Colonel Davenport Johnson, Hamilton Field's Commanding Officer, landed a Douglas C-33 airplane in San Francisco Bay when, after a flight from Rockwell Field, Calif., both engines of the giant plane quit due to iced carburetors.

Colonel Johnson and his crew, composed of Lieut. Colonel C.E. Giffin, Lieut. Aubrey C. Moore, Staff Sgt. G.A. Parker and Private F.A. McCallum, had passed over Oakland around 5:00 p.m., and having received a favorable weather report from Hamilton Field had prepared for a landing when the incident occurred. Notifying the Air Base of the situation after several attempts to start the engines had failed, Colonel Johnson ordered the wheels retracted and the men to prepare for a crash landing. Plowing into the water in the same manner as one of the flying boats, the plane remained intact and floated.

The personnel, receiving no injuries, then busied themselves preparing floats and rafts in case they were needed. Due to the haze, visibility was poor and a fire was built on the wing to attract attention. The radio operator was able to send messages, but could not receive. The men were rescued 45 minutes after the landing by one of the Richmond Yacht Service Company's boats, one of the many surface craft ordered out for the search.

The C-33, having remained afloat, was towed to the Pan American Clipper station at Alameda. It was not badly damaged and will be in commission at a later date.

"The date of January 4th seems to be one of hazardous flying for the men at Hamilton Field," declares the News Letter Correspondent. "Colonel Johnson's forced landing recalls to mind that a year ago almost to the hour on January 4th, Lieut. H.E. Knierim and Private H.E. Roberts disappeared in a blinding wind and rainstorm when approaching the field for a landing. Bits of wreckage of that crash were scattered over a radius of 300 yards, mute evidence of the terrific impact."

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Special Orders of the War Department announce the relief of Lieut. Colonel Joseph T. McNarney from duty with the GHQ Air Force, Langley Field, Va., and his assignment to duty at Hqrs. 6th Corps Area, Chicago, Ill., about July 1, 1938.

LIEUT. LEE'S EXPERIENCES IN A PHILIPPINE TYPHOON

On December 8th, last, the newspapers throughout this country carried a dispatch to the effect that Lieut. William Lee, Air Corps, accompanied by Major General Santos and Colonel Segundo, of the Philippine Army, flying in a transport airplane, were missing following the typhoon which swept the Philippine Islands on December 6th.

Four days later, the missing officers were located on Anirong Island by Lieut. Alfred Maxwell, pilot of one of a number of Air Corps planes engaged in the search for them.

Lieut. Lee's own story of his experiences during this flight, his landing on a small, unknown island, his several days' stay there during a furious wind and continuous rain, and his subsequent rescue is recounted below, viz:

The following radiogram was received at Cebu at 7:28 AM.,December 6,1937 from Philippine Army Headquarters,Manila:

"Number one typhoon signal hoisted three AM near over Tablas Island moving northwest or west by Weather Observatory, Manila."

This message was signed by operator on duty KZPT, Manila. In addition to the above telegram, I heard the weather report which was broadcasted from Manila around 7:00 AM on December 6th, and which was the same as published in Manila Bulletin on the same date. The above telegram and the weather report broadcasted led me to believe that weather conditions were not favorable over the usual route flown from Cebu to Manila, which is from Cebu over the northern part of Negros, northern part of Panay up the east coast of Mindoro and over Batangas. However, it was believed that favorable flying conditions would be found over the other route, which is from Cebu to Masbate and up the Bondoc Peninsula. We had been delayed one day at Dumaguete and one day at Cebu on account of weather. General Santos was suffering from an infection of the foot and all of us thought we should soon get to Manila. I was personally anxious to get to Manila because I wanted to have an engine check made on our plane and return promptly to Cagayan, Oriental Misamis,to check the airplane which Lt. Andrews had damaged in landing,before he attempted to fly it back to Manila. However, had I known that we would encounter such hazardous flying conditions, I naturally would never have left Cebu.

In this connection, it should be understood that the flight commander in this case, myself, is solely responsible of determining when a flight should begin. Neither General Santos nor any other high ranking Philippine Army Officers urged me to start when I did. Never had any passenger of mine asked me to make a flight which, in my own judgment, I believed to be dangerous or hazardous. High ranking Philippine Army officials have always left to me all decisions regarding flying. I have flown in the Philippine Islands since March, 1935 and have been over the routes between here and Cebu many times. Believing that the weather was favorable for flying conditions, I made the decision to leave Cebu on the morning of December 6th over the Masbate route and advised the District Commander of Cebu to send a radiogram at Army Head quarters advising them about the route which we were taking. It was my idea that we would not encounter any hazardour flying conditions and that if we did, we could land at Masbate, Legaspi, Pili, Daet or Paracale in case the weather became too bad.

We cleared the airdrome at Cebu at 8:35 AM on December 6th, having no other information about the weather other than that above stated and flew a course of 350 degrees which brought us approximately over the city of Masbate at about 10:00 AM. We were flying some seven to eight thousand feet in order to clear scattered clouds. After passing over Masbate, I steered a course of 315 degrees which would have brought us up the southwest coast of the Bondoc Peninsula. After flying this course for some time (I don't remember how long) and after reaching the point of Bondoc Peninsula, the clouds became heavy and quite thick. Directly ahead of us, and on our left or to the west, the clouds were much thicker and weather conditions looked unfavorable. On our right or to the East the clouds were lower and flying conditions looked favorable. Also, I had the several fields I have mentioned above in mind in case of emergency landings, so I turned to the course of 70 degrees and flew this course for approximately 30 minutes which brought me out over Camarines Norte south of Daet. To my left, or approximately 330 degrees, the weather appeared to be breaking, so I headed the ship on a course of 330 degrees and flew along the northeast coast of Camarines Norte some distance from the shore line. We were then flying approximately 11,000 feet. We encountered quite a few thunderheads,the larger ones we flew around and the smaller ones we flew through by instruments. However, none required more than a minute to two minutes to get through them.

Off to my left which was west, the weather looked bad, but straight ahead weather conditions appeared to be all right at the altitude of which we were flying. This led me to believe that I

could go around the bad weather on the left and get into Manila without encountering any hazardous flying conditions. Straight ahead was one fairly thick thunderhead into which I flew. When I flew through it,which required about two minutes, I looked to see if the other two ships were following. I did not see Lt. Francisco who was flying on my right, but I did see Lt. Sales who was flying on my left. He had apparently lost me in the cloud, so he turned away to the left and was losing altitude going in opposite direction from which I was. It appeared that he was planning to get down below the heavy clouds. From this time on, I never saw either of the two ships again, but shortly after Lt. Sales left us, we encountered heavy thick weather, however, not dark nor stormy.

I had to resort to my instruments with the hope that the heavy thick clouds I had encountered would only last for a few minutes, but after some 10 minutes of flying, it appeared that we would not run out of these clouds. I then changed my course to the west. I flew that course for several minutes and then headed south for several minutes. During all this time, I was flying by instruments. Realizing that I was in something bad and that it was impossible for me to get out, I decided to lose altitude so that I could pick up land and water. I was not sure of our exact position, but thought that I might be over the mountains on the east coast of Luzon. I therefore decided, in order to play safe, that I had better fly an easterly course for a few minutes so that I would be more or less sure of being over water and therefore not run into mountains while flying by instruments and while losing altitude.

After flying a few minutes east, I started losing altitude gradually in a big spiraling turn. After losing altitude to approximately 6,000 feet I could tell that we were over water and the thoughts of hitting mountains were dismissed. At this time, I advised General Santos and Col. Segundo to get the life vests from behind the back seat and blow them up by mouth and put them on. (These life vests are automatically operated by pulling a small cord which releases the gas from the container which inflates them.) However, I told them to conserve this gas and instructed them to blow their life preservers up by mouth. They each got a life preserver and blew them up. I instructed them as to how to put them on. After they had put on their life preservers, I asked Col. Segundo to get one for me and blow it up, believing that we would eventually have to land in the water. I was taking this precaution to be prepared so that any possibilities of drowning would be lessened. When Col. Segundo started to blow up my life preserver, he sighted land from his side of the airplane. I made a steep bank and picked up the land that he sighted and kept this in view while I rapidly lost altitude down to approximately 200 feet.

When I got down, I could see several small islands; however, not as distinct as on a clear day, but I could see their outlines and could tell the height of hills, etc., on them. I did not know what group of islands they were, but I knew that it would be impossible for us to get much farther as our gas was running low (having 40 or 45 minutes of gas left), so I began to look for a beach on which to land. After circling two islands, I picked up a sandy beach on one and decided to land. Soon after, getting down to where we could see and we could distinguish land, General Santos wanted to know if we were going to jump and I advised him "No" and that they should keep their safety belts as tight as possible because I was afraid that if I landed on a beach, that I might nose the airplane up which might injure them. After spotting this beach, I decided that this was the best place to get down and made a wide circle over the water heading the airplane into the wind, throttled down the engine and came in for a landing. The wind was blowing very strong and the sand was very soft (the wheels sank into the sand some six to eight inches), so when I landed, I did not roll more than 50 to 60 feet and just as the plane stopped rolling, it nosed up which was due to the soft sand acting as a brake on wheels. One blade of the propeller was slightly bent and this was the only damage done to the plane. This was at 12:25 PM. December 6th.

When the airplane nosed up, our hats and portfolios which we had on the back seat fell forward. Immediately after landing,Col. Segundo opened the door on his side, permitting our hats to fall out. I managed to rescue my 11-year old Stetson, but had to abandon Col. Segundo's which was in very deep water. Immediately, I rushed back to the plane and told them that if we could pull the plane down to normal position we could stay in it, sheltered from the wind and rain. I got a rope out of the baggage compartment and then over the tail. General Santos and I pulled it while Col. Segundo lifted the nose and without trouble, we pulled the tail down and had the airplane in a normal position. We climbed into the cabin and for a few minutes discussed matters, trying to determine exactly where we were. Very shortly, a man (he and his wife were the only inhabitants on the island) came up to the airplane. General Santos and Col. Segundo talked with him for several minutes and veri-

ified our position, which was Anirong Island. They also negotiated for some food and water. The old man went away and within 30 minutes he returned with a big pot of steaming rice and nine hard-boiled eggs and two large fresh cocoanuts, to us, a feast. General Santos gave him a peso which I considered a most brilliant investment. Soon after the old timer left, the rain slackened. General Santos and Col. Segundo decided to do a little reconnoitering and to find some stakes which I wanted to use in tying down the plane. They returned with the old man, who had stakes and a bolo which we used in securing the plane to prevent it from being blown away. We decided to stay in the plane for the night.

While General Santos and Col.Segundo had been in the old man's nipa hut they talked of the possibilities of existing for an indefinite period in the islands. They estimated that they had some fifteen big chickens, one pig of about 30 or 40 pounds, plenty of cocoanuts,three big sacks of rice and other food, as well as plenty of fresh rain water. Obviously,we were in no immediate danger of starvation.

Shortly after it began to get dark, the wind appeared to be stronger and we decided to leave the airplane for fear that we would be blown out to the sea with it. I got my flashlight out of my handbag and we started for the man's hut. We walked only some 50 yards through the cocoanut groves when the flashlight went out. The wind was blowing 30 miles an hour; darkness was almost complete and rain fell in torrents. Luck was against us, but we determined to get to the old man's house. We held hands in order not to get lost from each other, and after stumbling around over logs, brush and bogs, we spotted a light and headed straight for it. When we got to the hut, a small fire was going. We spent a very miserable night trying to keep warm and sleep at the same time. I was up and down all night putting wood on the fire and warming myself. I could not do much sleeping for several reasons: I was cold; I was trying to sleep on a hard board floor with a sack of rice for a pillow; then, also, I had Lts. Sales and Francisco in mind.

The leader of any flight in aviation, regardless of the size, is always responsible for his men that are flying the other planes. In this particular case, I figured that there was a possibility that both Lts. Sales and Francisco had become involved in even worse difficulties than ourselves, and I felt that, if the worst had happened, I would be responsible for having led them to their death. This was not only a source of worry to me during this first night, but for every night thereafter until Lt. Maxwell dropped a note from his airplane advising me that they had landed safely near Infanta. That was the best and most welcomed news that I have ever received.

Throughout the time in the island, the wind blew furiously and we had continuous rain. We knew that it was impossible for airplanes to make a search for us in such weather conditions and decided that we would have to remain lost and unheard from for an indefinite period, since it was impossible for our host to take a banca and go to Burdeos with a message.

General Santos had two books and I had several magazines with which we tried to pass the time, but about every 10 minutes, I would go to the door of the hut and make an estimate of the weather conditions. The first symptoms of any possibility of a weather break was Wednesday night, December 8th. Colonel Segundo spotted the moon and a few stars shining through a broken place in the clouds. We predicted good weather for the following morning, but were very badly disappointed within an hour when it was again raining hard. It rained on Thursday until about 2:00 PM. when it started to clear. About 5:00 o'clock, we heard an airplane and figured the search was on and we were shortly to be found. We rushed to the beach and saw an airplane some 10 miles away at approximately 4,000 feet heading for Manila. Through my field glasses, I identified it as a P-12 (Pursuit), but had no idea who was flying it, or where they had been. I later learned that it was Capt. Lewis who had made a rush trip to Jomalig Island to see if we had landed there. He was on his way back to Manila, and at that time he only had sufficient daylight time to get home before dark.

The following morning, which was Friday morning, the weather was clear and favorable. At about 9:00 AM. we sighted two O-19's (Observation planes) heading southeast. They were soon lost from sight, but about 9:30 AM, we spotted an O-19 heading directly for the island. Shortly before reaching the island, we heard the motor throttle down and the plane started on a long glide and we knew that the pilot had sighted our plane. The plane circled our plane and then circled over us. He flew around for several minutes, then came back and dropped us a message which advised us that Lts. Sales and and Francisco had landed safely at Infanta, and that he would send an amphibian airplane to pick us up as soon as possible. This message was signed by Lt. Maxwell who was the pilot to discover us. He is Commanding Officer of the Second Observation Squadron at Nichols Field and has been in the Philippines since January, 1935. He is due to return to the States in February,

1938, but there are at least three persons in the Islands who will keep him fresh in their memories.

At 6:30 on the morning of Friday, December 10th, our host and his wife left in their banca for Burdeos with a message that we had drafted, to be sent to the Adjutant General, in Manila. This message was to be sent to Polillo by runner and our host was to get a launch at Burdeos and return to the islands for us. He returned to the island about 11:00 AM with the launch. Although, by this time, we had been discovered by the U.S. Army Air Corps, we kept the launch until we sighted the rescue plane actually coming for us.

At 11:50 AM the amphibian, piloted by Capt. S.E. Prudhomme, landed. We got our baggage and took off at 12:20 PM and landed at Nichols Field at 1:05 PM.

Recently I heard some discussion as to whether or not the Weather Bureau had rendered us efficient service. It did. In my years of flying in the Philippines, the Weather Bureau has been of the utmost help on all occasions, and I can say only that I hope it continues to render as good service in the future as it has in the past.

For Lts. Sales and Francisco, pilots of the other two planes, this was an invaluable, never forgettable lesson. Certainly, it was for me. I must say, too, that it was the worst predicament that I have ever gotten into during my flying career. I shall not seek another.

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KEEPING PURSUIT PILOTS ON THEIR TOES

Pilots of the Pursuit Squadrons composing the 1st Pursuit Group at Selfridge Field, Mt. Clemens, Mich., are being put through a rigid series of examinations. The purpose of these tests is to insure, as far as is humanly possible, that Air Force pilots understand and obey the many changes in procedure, both on the ground and in the air, which have occurred in the last few months.

These examinations are given periodically from month to month and must be passed with a score of 100% by every pilot of the Group. Those who fail to make a grade of 100% on the first examination are given one week in which to qualify themselves for reexamination. A typical set of questions for one of these examinations follows:

I. Definitions.

1. What is a flight plan and what does it contain?
2. What is a controlled airport?
3. What is a controlled zone?
4. Describe a controlled zone of intersection.
5. Describe "Center of Controlled Zone of Intersection."
6. Describe "Green Zone of Intersection," "Amber Zone of Intersection," "Red Zone of Intersection."
7. Describe "Zone of Intersection Priority."
8. What is an alternate airport?
9. What is a contact flight.

II. Flight Rules, General

1. Aircraft approaching for a landing shall maintain a straight glide path for how many feet before crossing the airport boundary?
2. When two aircraft are crossing courses at approximately the same altitude, which aircraft has the right of way?
3. Upon approaching or overtaking aircraft, which way shall aircraft give way (right or left)?

III. Flight Rules Contact.

1. What are flight altitude rules for contact flights on a civil airway?
2. What are considered minimum safe altitudes?
3. What are the restrictions for contact flights within a controlled zone, with respect to distance below an overcast?
4. What are the restrictions for contact flights within a controlled zone, with respect to the distance above an overcast or thin cloud level?
5. a. What are the weather minimums outside a controlled zone for day contact flights at or below 1000 feet above the ground? b. Above 1000 feet above the ground?
6. a. What are weather minimums outside a controlled zone for night contact flights at or below 1000 feet above the ground? b. Above 1000 feet above the ground?
7. If weather conditions while enroute on a contact flight change to below minimums, what is required of the pilot?

IV. Instrument Flights

1. What are the instrument flight altitudes for Green, Amber and Red Airways?
2. What are the instrument flight altitudes off the Civil Airways?
3. What is the procedure for an instrument flight on an Amber Airway proceeding thru an Amber Zone of Intersection to (a) continue flight on an Amber, (b) to turn right on Red, (c) turn left on Red?

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A Douglas OA-4A was recently ferried to Selfridge Field, Mich., by 1st Lt. John K. Gerhart, Air Corps, from Langley Field, Va. This "duck" is to be used for rescue work over Lakes Erie, Huron and St. Clair. A new steel wing has been installed on this airplane, replacing the old type.

O B I T U A R I E S

Two promising young officers were lost to the Air Corps as the result of an unfortunate airplane accident on January 21, 1938, at Overhill, N.C., two miles north of Pope Field, Fort Bragg, N.C., when an O-46A airplane, piloted by Second Lieut. Lewis E. Countway, Air Reserve, with 1st Lieut. Earle T. MacArthur, Air Corps, passenger, crashed and burst into flames.

Lieut. MacArthur was born at Atoka, Oklahoma, August 27, 1907. After passing through grammar schools and high school, he attended the New Mexico Military Institute for one year, and the College of Engineering, University of Colorado, for two years. For 2⅔ years he was a member of the 157th Infantry, Colorado National Guard.

Appointed a flying cadet in the Air Corps, he graduated on June 27, 1929, from the Primary Flying School at March Field, Calif., and from the Advanced Flying School, Kelly Field, Texas, where he specialized in Attack Aviation, on October 12, 1929, on which date he was rated as "Airplane Pilot" and commissioned as Second Lieutenant in the Air Reserve.

Lieut. MacArthur was assigned to extended active duty at Fort Crockett, Galveston, Texas, where he was stationed until March 9, 1933, serving first with the 60th Service Squadron and later with the 90th Attack Squadron. He passed the examination for appointment in the Regular Army, and was commissioned a Second Lieutenant in the Air Corps, with rank from January 6, 1930.

Ordered to duty in Hawaii, Lieut. MacArthur served with the 75th Service Squadron at Wheeler Field to March 23, 1935, when he was transferred to Chanute Field, Rantoul, Ill., where he served with the 45th Pursuit Squadron until September 16, 1935, and then entered as student in the Aerial Photographic course at the Air Corps Technical School. He graduated from this School, with the rating of "Superior" on June 30, 1936, and was then transferred to duty at Pope Field, Fort Bragg, N.C.

Lieut. Countway was born at Quincy, Mass., November 27, 1914. He attended grammar schools and high schools in that city, and in 1936 graduated from the Northeastern University. Enlisting as a Flying Cadet June 25, 1936, he graduated from the Primary Flying School at Randolph Field, Texas, February 25, 1937, and from the Advanced Flying School, Kelly Field, Texas, June 30, 1937, specializing in Observation Aviation, and being rated as Airplane Pilot and Airplane Observer as of that date. He was commissioned a second lieutenant in the Air Reserve on that date and assigned to active duty for a period of three years at Pope Field, Fort Bragg, N.C.

The deep sympathy of the Air Corps is extended to the bereaved families of these young officers who died in the service.

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ASST. SECRETARY OF WAR VISITS MARCH FIELD

By the News Letter Correspondent

"America's present aircraft is the largest and finest in the world. But our plans for the future extend further, and you may say that the Army is ready," said the Hon. Louis A. Johnson, Assistant Secretary of War, upon his arrival at March Field by air on January 3rd, last.

Mr. Johnson's visit to the West Coast was the result of an invitation extended by Mr. Earl C. Gilmore, President of the Gilmore Oil Company and President of the Los Angeles Chapter of the Army Ordnance Association. Mr. Johnson was guest of honor and speaker at a banquet held by the Association at the University Club in Los Angeles. He spoke on "War Referendum, a Menace to Peace." In the course of his address he stated that "We are prepared. We have contracts right now with more than 10,000 large manufacturers, many of them in Los Angeles, pledging them to step into action the minute they are needed, if war comes. These firms are equipped or can quickly equip themselves for any emergency they may be called upon to meet."

The banquet was attended by Colonel Pirie, Air Base Commander, March Field; members of the Ordnance Association, and prominent business men and political leaders of Southern California.

While in Southern California, Mr. Johnson inspected March Field and airplane factories in the Los Angeles metropolitan area. Upon his arrival at March Field, he was met by Colonel Pirie and his staff.

From Los Angeles, Mr. Johnson flew to San Francisco, where he spoke on "Industrial Mobilization," and from San Francisco to Portland, Oregon, where he was the guest speaker at the "Jackson Day Dinner."

The C-32 in which Mr. Johnson was flying was piloted by Lieuts. J.W. Persons and Jesse Auton, of Bolling Field, D.C. Lieut. Auton, Mr. Johnson's aide, was recently stationed at March Field. The officers of this station greatly enjoyed renewing acquaintanceship with this splendid young officer.

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Staff Sergeant Preston A. Cuthbertson, stationed at Fort Bragg, N.C., was appointed a Technical Sergeant, Air Corps, January 20, 1938, to fill a vacancy at Mitchel Field, N.Y. For the present, Technical Sergeant Cuthbertson will remain on detached service at Fort Bragg.

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Selfridge Field, Mt. Clemens, Mich., has the unusual honor of having the two ranking officers of the Air Corps on the field within a few hours of one another. Major General Frank M. Andrews, Commanding the GHQ Air Force, arrived on January 12th and left at 10:30 a.m. on the 13th. At 1:00 p.m., Major General Oscar Westover, Chief of the Air Corps, dropped in from Cleveland and remained overnight.